

BloomBox Whitepaper

Version: 1.1

Contents:

1. What is BloomBox?
 2. Features
 3. Admin
 4. Integration
 5. Technical architecture
-

1. What is BloomBox?

BloomBox is a proprietary software toolkit created by Mint Digital. Through a combination of internal research projects and web application development, BloomBox has been developed to meet the needs of a diverse client base in the media and entertainment industries.

The collective expertise from Mint Digital's portfolio of work has been componentized into discrete reusable units that form the foundation for rapidly developed prototypes that seamlessly translate into scalable enterprise solutions.

BloomBox is in a constant state of development and represents both the process and product of Mint Digital's methodology. The individual BloomBox components define the emerging vocabulary necessary for the creation of cross platform media properties.

BloomBox allows our customers to reap the benefits of rapid application development yet is fully customizable with custom code for project-specific features. Also, clients have confidence in a technology that has been proven, both in terms of performance and stability across a number of high profile projects.

1. Features

The following are standard BloomBox features represent reusable components that are used to build prototypes and new software applications. As mentioned above, the individual units of the toolkit are all optional and customizable depending on the specific requirements of the project. BloomBox features include:

- **User Interface**
Includes basic user account creation with optional and required data fields. Email verification is standard, but other user confirmation solutions such as age verification services can be integrated. User interface elements broadly consist of:
 - **Profiles**
Profiles are highly customizable landing pages for user activity that typically include components such as media upload, avatars, and a chat module. These form the basis for online interaction and social networking. Drag and drop modules and individual preferences are also available to allow for user customization.
 - **Dashboards**
Dashboards represent an individual user's private workspace that can be customized to enhance their experience. Dashboard modules provide site activity feeds, messages, event notifications, weather notifications, etc. As with the profile page, drag and drop is also available.
 - **Graduated Sign Up**
Pre-registration/pre-signup engagement allows users to "invest" in the site through activities such as avatar creation or profile customization before being confronted with any account creation forms. Temporary user strategies can encourage users that would be deterred by a conventional signup flow into regular site participation.
- **Multimedia Comments**

Comments can be attached to almost any entity or piece of content with the BloomBox application. This includes, but is not limited to, video, audio, pictures, text or even another user. The comments can be image, video, text, or a combination of text with media. In terms of moderation, comments can be queued for moderators to review and dirty word filters can be applied. In addition CAPTCHA and quality content metrics for spam control can be used in the case where unverified users are allowed to participate.

- **Chat Wall/Chat Dialog Module**

The general commenting module can be used for user-to-user chat either in a standard “chat wall” style or with a UI that highlights the specific user-to-user dialogs. Within these dialogs, private messaging is supported. Ajax can be applied to the UI to allow for rich and responsive chat experience. In order to prevent “abuse”, users are able to block other users from commenting on their personal page.

- **Popularity Metrics**

BloomBox supports a variety of popularity metrics based on user ratings, views, comments, favoriting, etc. Depending on the requirements, these metrics can be used to drive content to the forefront to keep the site active, dynamic, and alive. Voting can be used in this context, but usually falls within designated competitive structures.

- **Tagging**

BloomBox supports tagging, one or more descriptive words associated with a group, video, photo, or another user.

- **Media Upload**

An almost universal component of BloomBox applications is media support for user generated audio, video, and images. Videos are embedded in the page as a sharable Flash object (like YouTube, no external player is required). Media can be watermarked, cropped and thumbnails selected as required. Common video codecs such as avi, mov, and wmv are supported for transcoding to flv. Also, media can be embedded into other sites such as Facebook or MySpace.

- **Groups**

BloomBox supports the various types of group organization that are common in online communities. Public, private, invite-only, approval required, and other custom variations are all possible.

- **Activity Feeds**

BloomBox can track all site activity and provide an interface for users to subscribe to any topic of interest through their personal dashboard. Events from personal social networks (friends or groups) aggregate on a subscription basis to provide the individual user information that matters to them. Activity feeds can also be designed for use on shared community pages to push current happenings straight to the user base.

- **Fanning/Friending**

Users may express relationships with other users (fans, friends, etc). These relationships can be used to display the users in interesting ways using ‘wisdom of crowds’ effects.

- **Competitions**
Voting and competitions represent a special focus of the BloomBox toolkit. Most of the standard BloomBox deployments feature some variety of competition to provide a call to action for the user base.
- **Voting**
BloomBox's voting components are highly scalable, tested against a variety of "gaming" attacks, and fully auditable. In large scale voting applications, the component is even separated into a distinct application where all the voting concerns ranging from security to auditing are isolated from the rest of the website.
- **Incentive Systems/Virtual Currency**
BloomBox supports incentive systems such as points or virtual currency that may be earned by users through various actions on the site. These incentives allow the site creators to encourage different types of site activity.
- **Media Favouriting**
Users can select pieces of media as their 'favorite'. Scarcity of favorites can be set by the administrator but can be unlimited allowing users to 'favorite' as much content as they choose.
- **User/Editorial Blogging Tools**
The BloomBox blogging tools allow an editorial staff to create multimedia posts that function as central points of community activity. An editorial team can easily create posts, upload images, schedule event times, and position the content in various locations of the site.

Blog posts can be organized into content channels and directed to areas designated in the presentation layer. These channels then allow users to comment with text, images, or video if enabled by the administrator.
- **Newsletters**
Automatic emails to be sent to users of a particular category (e.g. all those who have fallen foul of a moderation rule) or all users (e.g. a weekly newsletter) via the admin function. Users can opt out of newsletters if they choose.
- **Flash Player/Widget Integration**
BloomBox supports the integration of a variety of flash widgets such as third party streaming video players, ring tone makers, and various mashup or collaborative content creation widgets. For video players, the BloomBox administrative tool gives full control over remotely hosted playlists, player configuration, styling and ad rolls.
- **Rich Internet Applications**
BloomBox can also be integrated with RIA front ends such as Adobe AIR. For clients that are interested in a richly featured standalone, downloadable client application as an alternative to a browser based experience, Mint has launch production projects with this emerging technology.

2. Admin features

- **Administration Dashboard**

BloomBox provides a number of standard administration features for general site management:

1. Amend and track user statuses (allow users privileges, admin status);
2. Access moderation tool (see below);
3. Create editorial (e.g. homepage headers or editors blogs);
4. Application level statistics (e.g. new users, amount of media uploaded, traffic);
5. Write newsletters (see below);
6. Grant gifts (see below);

- **Moderation System**

BloomBox's moderation system has been praised by professional moderators for its intuitive interface and effective design.

The moderation interface allows for both pre and post moderation of all content (text, photos and videos) together with a host of other features to facilitate moderation.

This tool allows BloomBox clients broad control in screening incoming media before or after it is displayed publicly. Moderators can also track, edit, and delete users and objects created by users (photos, videos, comments) either individually or in aggregate. The moderator may mark users as 'suspect' and track 'suspect' users activity.

Mint does not provide moderation services but would be happy to recommend a moderation vendor if required.

- **Content Management (CMS)**

The content management support within the BloomBox differs fundamentally in concept and approach from other CMS solutions on the market. Mint strongly opposes an overly generalized approach to content management, one where everything is theoretically possible, but in practice there are limits to what you can actually achieve.

While these other systems promise flexibility, in reality, they are always limited because content management tools are developed before there is any understanding of the actual content.

Mint's approach is to first structure the web property to achieve real and meaningful goals, and then insert the administrative control of the content in the areas that make sense. The CMS tools are therefore simple, clean, and above all actually useful to a non-technical editorial staff that wants to control content.

- **SEO Tools**

Through the BloomBox admin interface, important metatags and title tags may be updated without having to perform new releases of the application. These SEO settings can be applied generally or targeted at specific URIs.

3. Integration

Though integration is evaluated on a project-by-project basis, Mint has broad experience with large and complicated client systems. Types of integration that we have expertise in include:

- **SSO – (Single Sign On)**
- **Ad-serving systems**
DoubleClick, Google Ads
- **Web Analytic/Tracking Systems**
Google Analytics, Traction, Hitbox, Omniture, WebTrends
- **APIs:**
 - Kaltura Video Collaboration Tools
 - Privo Age Verification
 - Oddcast Avatar Creation Tools
 - Facebook
 - Flickr
 - Google Maps
 - Twitter
 - Techsmart Ringtone Maker
 - Audible Magic
 - Salesforce
- **Mobile Integration**
- **Sponsor Driven Site Takeovers**

Accessibility

We adhere to the highest web standards with regard to accessibility. Our applications routinely support the following browsers:

- Firefox 2.x - Windows XP/Mac
- Firefox 1.5.x - Windows XP/Mac
- Internet Explorer 7 - Windows XP
- Internet Explorer 6 - Windows XP
- Safari – Mac
- Firefox with no Flash Plugin Installed
- Internet Explorer 7 with no Flash Plugin Installed
- Internet Explorer 6 with no Flash Plugin Installed

4. Technical Architecture

BloomBox has been designed as a multi-tiered, scalable system that separates important areas of concern into discrete resource centers.

In a fundamental sense, scaling the application simply becomes an issue of providing the necessary number of resource centers for the required load and then balancing the requests across the clustered resources nodes.

Basic Architectural Layers

- Hardware Firewall - Security Concerns
- Hardware Load Balancer - Distribution of Requests to Application Layer
- Application Server Cluster - Core of BloomBox Functionality
- Database Server Cluster - Persistence Layer

A minimal BloomBox configuration can eliminate the hardware load balancer and operate with only a firewall, a single server in the application cluster and the database cluster (for a minimum of two). However, future scalability depends upon the load balancing layer and will be required as the load requirements increase.

Detailed Architectural Layers

- Hardware Firewall - The firewall is managed by security specialists at our hosting service. Access is restricted to global http access and restricted (by IP whitelisting) ssh access to all production servers.
- Hardware Load Balancer - Depending on the request load, there are several levels of load balancing hardware available and we can discuss what is appropriate according to need. In addition to request balancing across the application layer, the load balancer monitors the response of the application servers in the cluster and will remove any nonfunctional server from the production cluster automatically.
- Application servers in the cluster use 64-bit Red Hat Enterprise Linux 4 and all BloomBox deployments are standardized to this environment. Client requests delegated to the server from the load balancer are received by nginx, a lightweight, high performance web server. The web server then delegates the request to a pool of evented mongrels, the execution container for the Ruby on Rails application code. One nginx master instance with a configurable number of worker processes is maintained on each application server. The number of upstream mongrel instances (ruby processes) is configured according to the load requirements.
- Database servers in the cluster also use 64-bit Red Hat Linux 4 and run MySQL. Larger deployments use one database server as the master where all the writes from the mongrel instances are delegated. According to need, a number of slave databases that replicate from the master are configured and the application database reads are distributed across those slaves.

Shared Architectural Layers

- User Uploaded Media - User Uploaded and transcoded media is shared via NFS across all application servers and database servers.
- Page Caching - High load web pages within the application are cached on the file system and shared among all mongrel instances in the cluster.
- Memcache - All mongrel instances share access to a distributed ramdisk for caching ruby objects, html fragments, and various json and xml feeds.
- Content Delivery Network - All media assets are distributed out to asset servers that are geographically located close to the requesting client. The original media assets are requested from our origin servers and cached in the delivery network. All links to media assets that are served from the application layer use URLs the configured CDN.

Monitoring Layers

- monit - In addition, to all system and http monitoring provided through our hosting services, all mongrel instances (ruby processes) are constantly monitored according to a variety of criteria including connection response, cpu utilization, load factor thresholds, and memory utilization. Processes that fail to meet production criteria are automatically restarted by the application when lapsing into a nonfunctional state.



